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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/810,295	03/25/2004	Dwain E. Morse	MARVIN-44024	9309

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EXAMINER	
LITHGOW, THOMAS M	

ART UNIT	PAPER NUMBER
1724	

DATE MAILED: 01/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/810,295	MORSE ET AL.	
	Examiner	Art Unit	
	Thomas M. Lithgow	1724	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 October 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-27* is/are pending in the application.

4a) Of the above claim(s) *none* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4,6-18 and 20-27* is/are rejected.

7)☒ Claim(s) *5 and 19* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *25 March 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *25 March 2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Applicant is reminded of the revised amendment practice 37CFR 1.121 (effective 30 July 2004) which applies to each and every time applicant files an amendment. This includes canceling nonelected claims in response to a restriction. Applicant is urged to comply with 37 CFR 1.121 in any and all future amendments or risk the amendment being held as non-compliant.

In regard to applicant's IDS dated 25 March 2004, it is noted that there is no prior art submitted by applicant in the USPTO electronic file wrapper system in the noted case ser. No. 10/270995 or 10/180216. Further, the foreign references denoted as (A-I by the examiner) are not identified by the country code and therefore are not considered. All the US patents and the specifically identified foreign patents are considered.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-3,9, and 11-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Baum (US 2746605). Baum '605 discloses a direct/full flow dissolved air flotation system including a mixer 11 for air 24 and chemicals 25 which leads to a dissolving/retention tank 13, a pressure sensor 30 activated release valve 29 leading to a bloom tank 36 having a distributor baffle 38, and a separation tank 39 with a skimmer 44. There will inherently be some pressure reduction occurring as the influent enters the bloom tank 36 as it flows past the flow restriction baffle 38. There is adjustable weir 40 between the bloom chamber and the separation chamber [col. 2, line 18]. The clarified liquid flows out the bottom of the tank and is removed over an adjustable wall in decontaminated water chamber 45.

3. Claims 1-4, 11 and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by WO 99/11352. WO '352 discloses a direct/full flow dissolved air flotation separation system in which gas 20 and chemicals 26 are added and mixed in a hydrocyclone mixer 30. The mixed influent is then reduced in pressure and released into a flotation tank (may be a separate tank than tank 4 shown in the figure [pg. 12, line 9+, see "holding tank"]. The collected floated oil/solids may be removed by a skimmer as noted at Pg.

12, lines 17+. It is disclosed that the WO '352 arrangement is meant to be employed before separation with "conventional separating techniques" [page 13, lines 2+]. The tank 4 shown is generic and has a feed area which can be considered a "bloom" chamber and the downstream portion of the tank which can be considered a "separation" chamber. Applicant should structurally define the separate chambers to give weight to their separate entities. Further the hydrocyclone mixer may have an additional liquid port as noted at page 11, lines 15-28. The flow in the hydrocyclone is noted to have a spinning motion.

4. Claims 1,11 and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Little (US 2220574). Little '574 discloses a direct/full flow flotation system with a gas dissolver/mixer tank 30 receiving an influent via 29, air 36, an additive 22/37 and a pressure reduction line 41 having a valve 42 leading to a bloom chamber (to the left of baffle 44 and under baffle 45). There is also a separation tank 40 having a skimmer 62/63/64.

5. Claims 1-3, 11 and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Kelly (US 2779731). Kelly '731 discloses a direct/full flow dissolved air flotation system with a mixer 17 for air 21 and chemicals 19 followed by a retention/dissolver tank 23 which leads to pressure reduction

structure including a valve 27 and a distributor 64 and plate 65. The bloom chamber is defined by cylindrical baffle 33 with the separation chamber defined by 31. The clarified liquid must flow under baffle 33 which is in the lower portion of the tank 31. There are skimmers 55 for the floats removal.

6. Claims 1 and 11-13 are rejected under 35 U.S.C. 102(b) as being anticipated by Vrablik (US 3179252). Vrablik '252 discloses a full flow dissolved air flotation system including a tank 41 in which an influent is mixed with air 42 and chemicals 58. Vrablik '252 has a circular tank similar to Kelly '731 with an internal cylinder 12 defining a bloom chamber and outer tank 10 defining a separation chamber. There is adjustable weir (unlabeled) adjacent the clarified water overflow launder 11.

7. Claims 1,6, 11 and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Willis (US 3977970). Willis '970 discloses a full flow dissolved air flotation process in which an influent 2 is premixed with air 4a and chemicals 4b in a mixer 33 and then released to a lower pressure via a valve 7 and a flow restricted outlet pot 11 which is an enlarged tube.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. Claims 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baum '605 as applied to claim 1 above, and further in view of either one of Mail (US 3446488) or Mail (US 3542675). As with Baum '605, the Mail '488 and Mail "675 process and device is a dissolved air flotation system for purifying polluted water by employing the depressurization of high pressure dissolved air containing water stream. Baum '605 employs a pressure release valve 29 in combination with an orifice and opposed plate (baffle) 38 as a pressure reduction structure. The Mail patents both disclose the use of a enlarged tube having a combined valve and apertured plate to effect a reduction in pressure and to distribute the released high pressure water to the lower pressure to effect the formation of the appropriate sized bubbles which will attach to the undesirable materials in the water to effect the flotation removal thereof.

The Mail patents operate on the principal of employing a small period of isolation of the high pressure water within the valve after the reduction of pressure to assure the desired bubble sizes in terms of uniformity and constant rate of production [Mail '675, col. 3, lines 63+] . The use of the either of the superior performing Mail valves in place of the old valve and baffle approach of Baum '605 to effect the pressure reduction would have been obvious to one of ordinary skill in the art at the time of the invention.

10. Claims 15-17, 20-21, 23-24 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baum '605 in view of either one of Mail '675 or Mail 488 and further in view of any one the four Brucker (US 4193869) or Lyon (US 4340487) or JP 07-303882A or JP 08-132020A. In regard to independent claims 15 and 24, Baum '605 fails to specifically teach the enlarged tube pressure reduction element with an apertured plate, and a dewatering apparatus positioned to receive floats from the flotation tank and to dewater the floats. The Mail patents are discussed above and applicant can refer to such explanations above. It is well known that the floats product (scum or sludge) of a flotation separation still contain a significant water component. As such , the prior art (see any of the above 4 newly cited patents) is replete with teachings to further dewater the floats

sludge prior to final disposition of the sludge (reuse which requires transport or incineration). To dewater the floats of Baum '605 would have been obvious to either reduce the cost of transport or to achieve a more desirable product for combusting.

11. Claims 4,8 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baum '675 and/or the other prior art in the rejections of claims 15 and 24 as applied to claims 1,15, 24 above, and further in view of WO 01/51164 or WO 99/11352. Before addressing the art rejection, it is noted that al three of the above claims recite "the mixing device" instead of the –the mixing apparatus--. Correction is required. Further claim 18 is dependent from claim 1 which would make it an identical to claim 4, also dependent from claim 1. Claim 18 will be considered to be dependent from claim 15 as this appears to be applicant's desire. Of course, correction is required. That being said, Baum '605 relies upon a pump/retention tank combination for gas mixing and dissolving. WO '164 and WO '352 both teaches an improved technique in which a hydrocyclone with plural inputs are employed for creating a swirl effect and dissolving of air into the water stream. This is affected prior to release and flotation which is consistent with the next steps in Baum '605. To employ the more recent and efficient

mixing and dissolving methods of WO '164 or WO '352 in place of the older Baum '605 mixer would have been obvious to one of ordinary skill in the art.

12. Claims 10, 22 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baum '605 and/or the other prior art in the rejections of claims 15 and 24 as applied to claims 1,15, 24 above, as applied to claims 10, 22 and 26 above, and further in view of Suutarinen (US 5516433). As taught by Suutarinen '433, the use of an apertured wall above the floor of a flotation vessel is noted to result in a more uniform flow toward the lower clarified water outlet with a resultant increase in separation efficiency [col. 2, lines 3-54]. To so modify Baum '605 which is rectangular flotation tank and employs a bloom chamber like Suutarinen '433 would have been obvious to one of ordinary skill in the art.

13. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Baum '605 as applied to claim 1 above, and further in view of any one of the four Brucker (US 4193869) or Lyon (US 4340487) or JP 07-303882A or JP 08-132020A. It is well known that the floats product (scum or sludge) of a flotation separation still contain a significant water component. As such , the prior art (see any of the above 4 newly cited patents) is replete with

teachings to further dewater the floats sludge prior to final disposition of the sludge (reuse which requires transport or incineration). To dewater the floats of Baum '605 would have been obvious to either reduce the cost of transport or to achieve a more desirable product for combusting.

Allowable Subject Matter

14. Claims 5 and 19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas M. Lithgow whose telephone number is 571-272-1162. The examiner can normally be reached on Mon. -Fri..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Duane Smith can be reached on 571-272-1166. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Thomas M. Lithgow
Primary Examiner
Art Unit 1724

TML